ICCAD

ICCAD'26

CALL FOR PAPERS

SPECIAL SESSION ON

Advanced Automation, Control, and Diagnostics for Large-Scale Industrial Machinery and Complex Operational Systems

for ICCAD 2026

July 7-9, 2026, Lisbon, Portugal

Session Co-Chairs:

Avadh Nagaralawala, Control System Consultant, Tucson, USA, Email: avadh4may@gmail.com

Session description:

This special session deals with the problem of achieving high-reliability automation, advanced control performance, and real-time diagnostic intelligence in large-scale industrial machinery and multi-component operational systems. As industries move toward intelligent, electrified, and autonomous operations, the complexity of their machinery architectures continues to grow. These systems increasingly rely on high-speed sensing, robust PLC/SCADA integration, automated fault detection, data-driven diagnostics, digital-twin modelling, and high-availability communication pathways.

Despite significant advancements, many industrial operations still operate with legacy control platforms, fragmented data environments, and limited diagnostic visibility, creating challenges in long-term reliability, predictive maintenance, and safety-critical decision-making. This session addresses these challenges by bringing together recent developments across control engineering, monitoring, automation, and industrial diagnostics.

The goal is to create a focused forum where researchers, engineers, and practitioners can present and discuss innovations that improve system-level automation, monitoring accuracy, fault-resilience, and operational continuity. The session encourages methods that leverage control theory, signal processing, embedded intelligence, hardware-software integration, and novel real-time architectures for industrial environments.

The topics of interest include, but are not limited to:

- Advanced control architectures for large-scale industrial machinery
- PLC/SCADA integration strategies for modernized automation platforms
- Digital twin models for industrial control systems and heavy equipment
- Automation for high-duty operational cycles and repetitive industrial processes
- Supervisory control, system-level coordination, and real-time decision frameworks
- Sensor fusion and data acquisition for harsh industrial environments
- Industrial communication networks and data pathways for distributed control
- Safety-integrated system designs and high-reliability automation

SUBMISSION

Papers must be submitted electronically for peer review by: **January 31, 2026**

https://www.iccad-conf.com/submission/

All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double column format).